



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,515	06/25/2003	Paul Petrus	15685P213	5235
45222	7590	09/24/2007		
ARRAYCOMM/BLAKELY 1279 OAKMEAD PARKWAY SUNNYVALE, CA 94085-4040			EXAMINER AJIBADE AKONA1, OLUMIDE	
			ART UNIT 2617	PAPER NUMBER
			MAIL DATE 09/24/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/606,515

Applicant(s)

PETRUS, PAUL

Examiner

Olumide T. Ajibade-Akonai

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 25-45, 47 and 48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34 and 35 is/are allowed.
- 6) ☒ Claim(s) 25-27, 36, 37, 44, 45 and 47 is/are rejected.
- 7) ☒ Claim(s) 28-33, 38-43 and 48 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10 July 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 25, 36, 44, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bringby et al 6,283,883 (hereinafter Bringby)** in view of **Itoh et al**

***“Performance of Handoff Algorithm Based on Distance and RSSI Measurements”***  
**(hereinafter Itoh).**

Regarding **claim 25**, Bringby discloses a method for facilitating handover between a base station pair (originating and neighbor BS's, see col. 3, lines 61-67, col. 4, lines 1-8) in a communication system comprising: computing a cost function (hysteresis plus  $RSSI_{orig}$ , see col. 4, lines 23-28) for the base station pair (BS's of the originating and neighbor cell, see fig. 3, col. 3, lines 61-67 and col. 4, lines 1-7) dependent on a relative received signal strength ( $RSSI_{orig}$ , see col. 3, lines 23-28) and an adaptive hysteresis factor (hysteresis level, see col. 4, lines 23-28, 39-50 and col. 5, lines 1-16) dependent on the standard deviation of a residual signal from each base station of the base station pair (standard deviation of signal strength from signal produced by the base station of the originating cell and the base station of the neighboring cell, see col. 4, lines 50-67, col. 5, lines 1-3); and selecting a base station from the pair dependent on the cost function (handoff to a neighbor BS is initiated if the  $RSSI_{orig}$  plus hysteresis is lower than the  $RSSI_{neighbor}$ , see col. 4, lines 23-28).

Bringby fails to disclose selecting a base station from the pair of base stations dependent on the cost function and a second factor, wherein the second factor is either base station load or physical distance between a user terminal and the base station.

In the same field of endeavor, Itoh discloses selecting a base station from the pair of base stations dependent on the cost function (inherent, since measured signal strength from a serving base station in a cell A is compared the signal strength of

Art Unit: 2617

a base station in an adjacent cell B to see if the signal strength from the adjacent station exceeds that of the serving base station by a hysteresis value  $h$ , see fig. 1(a), p.1461, lines 1-10) and a second factor (measured distance, see fig. 1(a), p.1461, lines 10-15), wherein the second factor is either base station load or physical distance between a user terminal and the base station (measured distance, see fig. 1(a), p.1461, lines 10-15).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Itoh into the system of Bringby for the benefit of reducing average handoff delay and the average number of handoffs in a mobile communication system.

Regarding **claim 36**, Bringby discloses a machine-readable medium having stored thereon a set of machine-executable instructions (mobile station, MS, see col. 2, line 56-58) that, when executed by a data-processing system, cause the system to perform a method for facilitating handover between a base station pair (originating and neighbor BS's, see col. 3, lines 61-67, col. 4, lines 1-8) in a communication system comprising: computing a cost function (hysteresis plus  $RSSI_{orig}$ , see col. 4, lines 23-28) for the base station pair based on a relative received signal strength ( $RSSI_{orig}$ , see col. 3, lines 23-28) and an adaptive hysteresis factor (hysteresis level, see col. 4, lines 23-28, 39-50 and col. 5, lines 1-16) dependent on the standard deviation of a residual signal from each base station of the base station pair (standard deviation of signal strength from signal produced by the base station of the originating cell and the base station of the neighboring cell, see col. 4, lines 50-67, col. 5, lines 1-3); and

Art Unit: 2617

selecting a base station from the pair dependent on the cost function (handoff to a neighbor BS is initiated if the  $RSSI_{orig}$  plus hysteresis is lower than the  $RSSI_{neighbor}$ , see col. 4, lines 23-28).

Bringby fails to disclose selecting a base station from the pair dependent on the cost function and a second factor, wherein the second factor is either base station load or physical distance between a user terminal and the base station.

In the same field of endeavor, Itoh discloses selecting a base station from the pair of base stations dependent on the cost function (inherent, since measured signal strength from a serving base station in a cell A is compared the signal strength of a base station in an adjacent cell B to see if the signal strength from the adjacent station exceeds that of the serving base station by a hysteresis value  $h$ , see fig. 1(a), p.1461, lines 1-10) and a second factor (measured distance, see fig. 1(a), p.1461, lines 10-15), wherein the second factor is either base station load or physical distance between a user terminal and the base station (measured distance, see fig. 1(a), p.1461, lines 10-15).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Itoh into the system of Bringby for the benefit of reducing average handoff delay and the average number of handoffs in a mobile communication system.

Regarding **claim 44**, Bringby discloses a processing unit for facilitating handover between a base station pair in a communication system (inherent, since it is well known for a mobile station, MS, to have a CPU, controller or processing unit to accomplish the

Art Unit: 2617

tasks of receiving the signal strength from the originating and neighbor base stations and calculating the hysteresis factor, see col. 2, line 56-58), comprising: a base station selection unit to select a base station dependent on the inputs from a received signal strength measurement (RSSI) unit (inherent, since it is well known for a mobile station, MS, to have a CPU, controller or processing unit to accomplish the tasks of receiving the signal strength from the originating and neighbor base stations and calculating the hysteresis factor, and based on the calculated hysteresis factor plus the RSSI, initiating a handoff, see col. 2, 56-58, col. 4, lines 1-28), an adaptive hysteresis calculation unit (see col. 4, lines 23-28) that provides an adaptive hysteresis factor dependent upon the standard deviation of a residual signal from each base station of the base station pair (standard deviation of signal strength from signal produced by the base station of the originating cell and the base station of the neighboring cell, see col. 4, lines 50-67, col. 5, lines 1-3).

Bringby does not explicitly disclose a distance calculation unit.

In the same field of endeavor, Itoh discloses a distance calculation unit (see fig. 1(a), p.1461, lines 1-15).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Itoh into the system of Bringby for the benefit of reducing average handoff delay and the average number of handoffs in a mobile communication system.

Regarding **claim 47**, as applied to claim 44, Bringby further discloses wherein the adaptive hysteresis calculation unit recursively determines the standard deviation of

Art Unit: 2617

the residual signal from each base station of the base station pair (see col. 4, lines 51-67).

4. Claims 26 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bringby et al 6,283,883 (hereinafter Bringby)** in view of **Itoh et al "*Performance of Handoff Algorithm Based on Distance and RSSI Measurements*" (hereinafter Itoh)**, as applied to claims 25 and 36 above, and further in view of **Watters et al 20010002822 (hereinafter Watters)**.

Regarding **claim 26**, as applied to claim 25, Bringby discloses the claimed invention except wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference.

In the same field of endeavor, Watters discloses wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference (calculation of distance using signal transmitted from base station, see fig. 3, p.3, [0021]-[0022]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Watters into the system of Bringby et al for the benefit of providing a mobile terminal with a GPS receiver for determining location.

Regarding **claim 37**, as applied to claim 36, Bringby discloses the claimed



invention except wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference.

In the same field of endeavor, Watters discloses wherein the physical distance is derived from a propagation delay determined from a relative time-of-arrival of a broadcast message transmitted from the base station synchronized according to a common timing reference (calculation of distance using signal transmitted from base station, see fig. 3, p.3, [0021]-[0022]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Watters into the system of Bringby et al for the benefit of providing a mobile terminal with a GPS receiver for determining location.

5. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bringby et al 6,283,883 (hereinafter Bringby)** in view of Itoh et al "*Performance of Handoff Algorithm Based on Distance and RSSI Measurements*" (hereinafter Itoh), as applied to claim 25 above, and further in view of **Akopian et al 6,466,164 (hereinafter Akopian)**.

Regarding **claim 27**, as applied to claim 25, Bringby discloses the claimed invention except wherein the physical distance is derived from a time-of-arrival of a time-stamped message transmitted from the base station.

In the same field of endeavor, Akopian teaches wherein the physical distance is derived from a time-of-arrival of a time-stamped message transmitted from the base station (see col. 1, lines 13-39).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Akopian into the system of Bringby for the benefit of determining the pseudorange from a receiver to a beacon that transmits a ranging signal.

6. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bringby et al 6,283,883 (hereinafter Bringby)** in view of Itoh et al "***Performance of Handoff Algorithm Based on Distance and RSSI Measurements***" (hereinafter Itoh) as applied to claim 44 above, and further in view of **Hashem et al 20030073455 (hereinafter Hashem)**.

Regarding **claim 45**, as applied to claim 44, Bringby further discloses wherein the base station selection unit selects the base station dependent on a cost function (handoff to a neighbor BS is initiated if the RSSI\_orig plus hysteresis is lower than the RSSI\_neighbor, see col. 4, lines 23-28).

Bringby fails to disclose wherein the base station selection unit selects the base station dependent on a base station load input.

In the same field of endeavor, Hashem discloses wherein the selection of a base station is dependent on a base station load input (see fig. 1, p.3, [0007]).

It would therefore have been obvious to one of ordinary skill in the art to combine the teaching of Hashem into the system of Bringby for the benefit of providing optimum data communication.

***Allowable Subject Matter***

7. Claims 34 and 35 allowed.

The following is an examiner's statement of reasons for allowance: Regarding claim 34, Bringby et al 6,285,883 discloses a method for computing an adaptive hysteresis factor to facilitate handover between a base station pair in a communication system comprising: computing a standard deviation of a residual signal associated with transmission from a first base station to obtain an estimate of a first base station signal strength fluctuation; and computing a standard deviation of a residual signal associated with transmission from a second base station to obtain an estimate of a second base station signal strength fluctuation. The instant invention discloses multiplying the sum of the estimated station signal strength fluctuation of the first and second base station with a scaling factor to obtain an adaptive hysteresis factor. The above novel features in combination with all the recited limitations of claim 34 are neither taught, suggested nor made obvious by Bringby et al or any other prior art. Claim 35 is allowable based on its dependence on claim 34.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 28-33, 38-43, 47, and 48 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2617

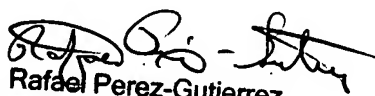
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olumide T. Ajibade-Akonai whose telephone number is 571-272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rafael Perez-Gutierrez can be reached on 571-272-7915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA  
OA

  
Rafael Perez-Gutierrez  
Supervisory Patent Examiner  
Technology Center 2600  
Art Unit 2617  
9/14/07